Adapted from: Smith, Margaret Schwan, Victoria Bill, and Elizabeth K. Hughes. “Thinking Through a Lesson Protocol: Successfully Implementing High-Level Tasks.”

*Mathematics Teaching in the Middle School 14* (October 2008): 132-138.

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| **PART 1: SELECTING AND SETTING UP A MATHEMATICAL TASK (PREPARE)** | |
| What are your **mathematical goals** for the lesson? (i.e., what do you want  students to know and understand about mathematics as a result of this lesson?) | * Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by sing equations, rectangular arrays, and/or area models. * Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. |
| * What are your **expectations** for students as they work on and complete this task? * What **resources or tools** will students have to use in their work that will give them entry into, and help them reason through, the task? * How will the students work—   independently, in small groups, or in pairs—to explore this task?   * How will students record and report their work? | * Students will be actively engaged, respectful, be active listeners, participate and contribute in class discussion. * Class money, Paper, pencils, table to organize information, and various manipulatives. * They will work in pairs to do this task. * Paper and pencil. By drawing models, on whiteboards, and/or document camera. |
| How will you introduce students to the activity so as to provide access to *all*  students while maintaining the cognitive demands of the task? | **LAUNCH**   * Begin by asking if they would like to go on a field trip, take ideas of where they would like to go. * Tell them we don’t have any money, and we will have to make the money in order to go. * What are some ways that you have earned money in the past? * After taking ideas, tell them we are going to have a class Recess Refreshment Stand where they will sell their desired drink and food item. How much food and drink will you need to sell to pay for all of our class to go on our field trip? |

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| **PART 2: SUPPORTING STUDENTS’ EXPLORATION OF THE TASK (EXPLORE)** | |
| As students work independently or in small groups, what **questions** will you ask to—   help a group get started or make progress on the task?   focus students’ thinking on the  key mathematical ideas in the task?   assess students’ understanding of  key mathematical ideas, problem- solving strategies, or the representations?   advance students’ understanding  of the mathematical ideas? | * “What question(s) are you trying to answer?”   “What information do you already have?”  “What do you need to figure out?”   * “What operation do you need to use here?” “What items have you decided to sell?” * “Is there a way you could use multiplication instead of addition?” * “How many different ways could this work?” |
| How will you ensure that students remain **engaged** in the task?   What assistance will you give or what questions will you ask a  student (or group) who becomes  quickly frustrated and requests more direction and guidance is  solving the task?   What will you do if a student (or group) finishes the task almost  immediately? How will you  extend the task so as to provide additional challenge? | * “Why did you do that?”   “How can you get the information? |

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| **PART 3: SHARING AND DISCUSSING THE TASK (DISCUSS/DEBRIEF)** | |
| How will you **orchestrate the class discussion** so that you accomplish your mathematical goals?   Which solution paths do you want to have shared during the  class discussion? In what order will the solutions be presented? Why?   What specific questions will you ask so that students will—  1. make sense of the  mathematical ideas that you want them to learn?  2. expand on, debate, and question the solutions being shared?  3. make connections among the different strategies that are presented?  4. look for patterns?  5. begin to form generalizations?  ***What will you see or hear that lets you know that all students in the class***  ***understand the mathematical ideas that***  ***you intended for them to learn?*** | * Collaborate with others, share ideas, Start with the simpler solutions and move towards the more complex.  1. Why did you do it that way? 2. Did anyone do it a different way? 3. Is there only one right solution?   You will see presentations that represent their understandings to the task. |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Recess Refreshments

Our class is raising money for a field trip. You have the opportunity to sell at least two items at the school store during recess. One needs to be a drink, and one needs to be a food item. We need enough money for all of our students to go to \_\_\_\_\_\_\_\_\_\_\_\_\_\_. Each ticket costs $8.00, and there are 31 students in our class. How much food and drink will you need to sell to make enough money for our class to go on the field trip?

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| --- | --- |
| Drink | Cost |
|  | $1.00 |
|  | $2.00 |
|  | $3.00 |



|  |  |
| --- | --- |
| Food | Cost |
|  | $1.00 |
|  | $2.00 |
|  | $3.00 |

“How much more will you need to sell to pay for the bus we will take?”

“How much more will you need to sell to pay for the other classes?”

“Can you solve it in a different way? (Using more drinks than food or more food than drinks?”

“If you are selling for one/two weeks, how much would you need to sell per day?”

Extensions:

Recess Refreshments